ISSN 1044-8187

Copies available from

Publications Unit
U.S. Fish and Wildlife Service
1849 C Street, N.W.
Mail Stop 130—ARLSQ
Washington, DC 20240

Department of the Interior
U.S. Fish and Wildlife Service

This publication was printed at the UNICOR Print Plant,
Federal Correctional Institution, Ray Brook, NY

FISH HEALTH BULLETIN 8

PROTOZOAN PARASITES OF FRESHWATER FISHES

Fred P. Meyer
U.S. Fish and Wildlife Service
National Fisheries Research Center—La Crosse
P.O. Box 818
La Crosse, Wisconsin 54601

and

G. L. Bullock
U.S. Fish and Wildlife Service
National Fisheries Research Center—Leetown
National Fish Health Research Laboratory
Box 700
Kearneysville, West Virginia 25430

1990

INTRODUCTION

External and internal parasites occur in all species of freshwater and saltwater fishes. In nature, a balance is usually established between parasites and their fish hosts. In intensive fish culture operations, however, parasites can cause significant mortalities. External single-celled protozoan parasites are among the most serious pathogens of cultured freshwater fish. Some of the most common of these are described here.

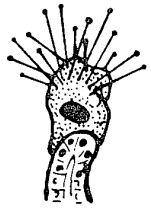
SIX IMPORTANT PROTOZOAN PARASITES

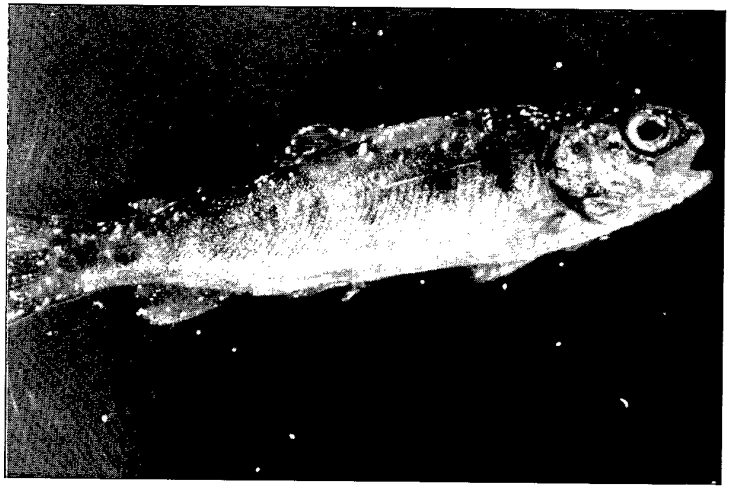
Parasites of this group are tiny organisms that must be studied with a microscope to verify their identification. Most often, they cause major problems in fry or fingerlings. The following protozoans are commonly encountered in intensive fish culture.

Trichodina—small, circular organisms with a conspicuous internal "toothed" disk that dart erratically over the surface of body, gills, and fins and may cause extensive mortalities. Cilia around the margin may or may not be obvious. Many species are in the genus.

Ambiphrya (*Scyphidia*)—small, urn-shaped organisms that attach themselves to the body, gills, and fins. Their cilia beat actively. Several species are in the genus.

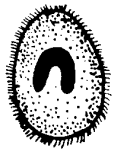
Trichophrya—small organisms that resemble pin cushions and are found on the gills. Delicate tentacles extend outward from the body. These organisms may not be true parasites but their presence is irritating to the gills, and if abundant they interfere with respiration. Several species are in the genus.





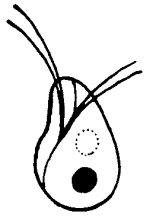
Advanced infection of *Ichthyophthirius multifiliis* in trout, showing the numerous white spots of the parasite embedded in the skin.

Ichthyophthirius multifiliis—these spherical organisms cause the dreaded "Ich" disease and can be lethal to all freshwater fish. A horseshoe-shaped nucleus is visible even in live specimens and positively identifies the parasite. In advanced cases, the parasites are evident as small white pustules over the bodies and fins of infected fish (Figure). Only one species is in the genus.



Chilodonella—colorless, oval, flattened organisms that creep rapidly over the fins, body, and gills. Under high magnification, faint bands of cilia can be seen. Highly destructive. Many species are in the genus.

Ichthyobodo (*Costia*)—very small parasites that are often overlooked by observers. These pear-shaped organisms can be detected by their movement, which resembles a flickering flame, or by a careful examination of the margin of a fin. Cause serious disease problems. Several species are in the genus.



CONTROL

External protozoan parasites may be controlled by treatments of 25 ppm of formalin in ponds or 250 ppm formalin for 1 h in tanks. A repeat treatment is sometimes necessary. *Ichthyophthirius* requires daily treatments until controlled.

SUGGESTED READING

Meyer, F. P. 1966. Parasites of freshwater fishes. IV. Miscellaneous. 6. Parasites of catfishes. U.S. Fish and Wildlife Service, Fish Disease Leaflet 5. 7 pp.

Detailed description of parasites of freshwater fishes including protozoans, monogenetic trematodes, digenetic trematodes, cestodes, nematodes, acanthocephalans, leeches, and copepods.

Plumb, J. A., editor. 1985. Principal diseases of farm raised catfish. Southern Cooperative Series Bulletin 225. 76 pp.

Describes the important infectious diseases of farm-raised channel catfish.

NOTE: A fish disease specialist should be consulted for diagnostic assistance whenever a disease is suspected and before chemical treatments are used.

The use of chemicals or drugs on fish intended for human or animal consumption must be in accordance with current laws and regulations.

Use of trade names does not imply U.S. Government endorsement of commercial products.